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10/810,837

03/29/2004

Atsushi Yagishita

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09/11/2006

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EXAMINER

MENZ, DOUGLAS M

ART UNIT

PAPER NUMBER

2891

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,837

Applicant(s)

YAGISHITA ET AL.

Examiner

Douglas M. Menz

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-14 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-13 and 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 11-13 and 22-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant's Admitted Prior Art (APA).

Regarding claim 11, APA discloses a semiconductor device, comprising:

a gate electrode (3506, 3508 and 3507 constitute the gate electrode) of a MISFET formed on a semiconductor substrate (3501) and electrically connected to a well region (3503) under a channel of the MISFET (Prior Art Figs. 26A-B and page 2 of the specification),

wherein the MISFET is formed on part of at least one side surface of an island-shaped element region formed on the semiconductor substrate (Prior Art Figs. 26A-B and page 2 of the specification),

the gate electrode of the MISFET is formed on at least part of the at least one side surface (3508 and 3507, Prior Art Figs. 26A-B) and an upper surface (3506) of the island-shaped element region, the upper surface being a surface of the well region (It is the Examiner's position that 3508 and 3507 constitute portions of the gate electrode

since they are conductive materials formed together with 3506 to form a continuous electrical contact to the well region 3503);

and an electrical connection between the gate electrode of the MISFET and the well region in the semiconductor substrate formed on the upper surface of the island-shaped element region (Prior Art Figs. 26A-B and page 2 of the specification).

Regarding claim 12, APA further discloses two gate electrodes connected electrically and formed on opposite side surfaces of the island-shaped element region (Prior Art Figs. 26A-B and page 2 of the specification, note that gate electrode 3506 is in electrical contact with well region 3503 via 3508 in conjunction with 3507, therefore, the gate electrode structure comprises three gate electrodes as follows: 3506 on top and 3508/3507 on opposite sides of the island shaped element, Prior Art Figs. 26A-B).

Regarding claims 13 and 24, APA further discloses a source and drain (3504) formed to on opposite side surfaces of the island-shaped element region, the source and drain regions being formed on at least one side of each of the two gate electrodes (Prior Art Fig. 26A and page 2 of the specification).

Regarding claims 22 and 25, APA further discloses wherein the bottom surfaces of the source and drain regions are in contact with each other (via 3503, Prior Art Figs. 26A-B).

Regarding claim 23, APA discloses a semiconductor device, comprising:
an island-shaped element region including a well region (3503, Prior Art Figs. 26A-B) formed on a substrate, the island-shaped element region having side surface regions opposite to each other and an upper surface formed between the side surface regions, the upper surface being a surface of the well region; and gate electrodes of at least one MISFET formed over the side surfaces and the upper surface of the island-shaped element region, wherein the gate electrodes are electrically connected to the well region (Prior Art Figs. 26A-B and page 2 of the specification, note that gate electrode 3506 is in electrical contact with well region 3503 via 3508 in conjunction with 3507, therefore, the gate electrode structure comprises three gate electrodes as follows: 3506 on top and 3508/3507 on opposite sides of the island shaped element, Prior Art Figs. 26A-B).

Response to Arguments

Applicant's arguments filed 6/12/06 have been fully considered but they are not persuasive. Applicant argues that APA does not disclose a direct electrical connection between the gate electrode 3506 and the upper surface of the well region 3503 because metal plugs 3508 and p+ type diffusion layers 3507 are positioned between 3506 and 3503. Examiner disagrees. Metal plugs 3508 and p+ type diffusion layers 3507 are both conductive materials which maintain electrical connection between 3506 and 3503, as such, 3508 and 3507 are interpreted to be portions of the gate electrode in combination with 3506.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas M. Menz whose telephone number is 571-272-1877. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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